

# POWER LOCKS

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## GENERAL INFORMATION

Power locks are optional equipment on XJ (Cherokee) models. Power windows and the keyless entry system are included on vehicles equipped with the power lock option. All doors and the liftgate can be locked and unlocked electrically by operating the switch on either front door panel, or by operating the lock and unlock buttons of the remote keyless entry transmitter. The power lock and keyless entry systems operate with battery power supplied independent of the ignition switch.

Following are general descriptions of the major components in the power lock system. Refer to Group 8W - Wiring Diagrams for complete circuit descriptions and diagrams. Refer to the owner's manual for more information on the features and use of these systems.

### POWER LOCK SWITCH

The power locks are controlled by a two-way switch mounted on the trim panel of each front door. The switch controls battery feed to the lock and unlock relays. The door lock switches can not be repaired. If faulty, the entire switch must be replaced.

### POWER LOCK/UNLOCK RELAYS

The power lock and unlock relays are located in the relay center. The relay center is located on the lower instrument panel reinforcement behind the lower instrument panel and just right of the steering column. The relays respond to inputs from the power lock switches and the keyless entry module by sending the correct battery and ground feeds to the lock motors. The lock and unlock relays can not be repaired. If faulty, they must be replaced.

### POWER LOCK MOTOR

The locks are actuated by a reversible motor mounted within each door. The motor direction is

controlled by the battery and ground feeds from the power lock/unlock relays. The motor can not be repaired. If faulty, the entire motor must be replaced.

### KEYLESS ENTRY TRANSMITTER

The keyless entry transmitter is equipped with two buttons labeled Lock and Unlock. It is also designed to serve as a key fob and is equipped with a key ring. Each transmitter has a different vehicle access code, which must be programmed into the memory of the keyless entry module in the vehicle in order to operate the locks. The operating range of the infrared transmitter signal is up to 4.75 meters (15 feet) from the receiver.

The transmitter operates on two CR1616 3-volt (or equivalent) batteries. Typical battery life is from one to two years.

### KEYLESS ENTRY MODULE

The keyless entry module is mounted in a housing on the headliner near the windshield between the sunvisors, or inside and towards the rear of the overhead console (if equipped). This module contains the keyless entry receiver and program logic for the keyless entry system.

The keyless entry module has a memory function to retain the vehicle access code of at least one, and up to four transmitters. The module receives input from the remote keyless entry transmitter. In response to that input, it is programmed to control outputs to the lock and unlock relays. The module can not be repaired and, if faulty, must be replaced.

## DIAGNOSIS

As a preliminary system diagnosis, note system operation while you actuate both the Lock and Unlock functions with the power lock switches and the keyless entry transmitter. Then, proceed as follows:

- If system fails to function with either the switches or the transmitter, see Power Lock System diagnosis.
- If system functions with both switches, but not the transmitter, see Keyless Entry Transmitter diagnosis.
- If system functions with transmitter, but not with one or both switches, see Power Lock System diagnosis.
- If one lock fails to operate with the switches or transmitter, see Power Lock Motor diagnosis.

### POWER LOCK SYSTEM

(1) Inspect fuse 13 in fuseblock module. Replace if necessary. If OK, measure voltage at battery side of fuse. There should be 12 volts. If not OK, repair open from Power Distribution Center.

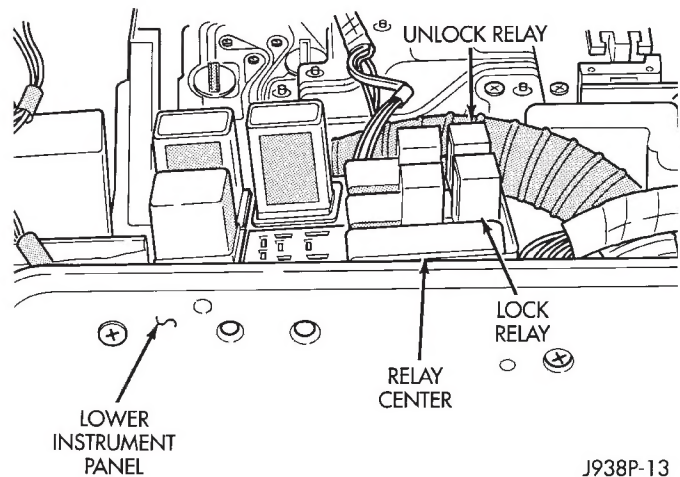
(2) Remove door switch(es) and measure voltage at terminal 1. Meter should read battery voltage. If OK, go to next step. If not OK, repair open to fuse 9 in fuseblock module.

(3) Check door switch continuity as shown in the applicable charts on the following pages. If OK, go to next step. If not OK, replace switch.

(4) The power lock/unlock relays are in the relay center. The relay center is located on the lower instrument panel reinforcement just right of the steering column (Fig. 1). Remove both relays.

(5) Measure resistance between lock and unlock relay terminal 4 (87A) and ground. Meter should read zero ohms. If OK, go to next step. If not OK, repair open to ground.

(6) Measure voltage at terminal 2 (87) of both the lock and unlock relays. Meter should read battery voltage. If OK, go to next step. If not OK, repair open to fuse 13 in fuseblock module.



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**Fig. 1 Power Lock/Unlock Relays**

(7) Measure resistance between lock and unlock relay terminal 5 (85) and ground. Meter should read zero ohms. If OK, go to next step. If not OK, repair open to ground.

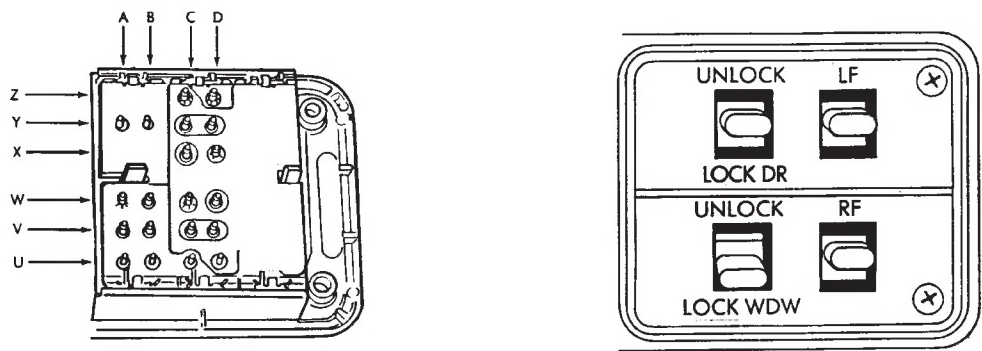
(8) Hold driver's side switch in LOCK position. Measure voltage at lock relay terminal 3 (86). Meter should read battery voltage. If OK, go to next step. If not OK, repair open to driver's side switch.

(9) Hold driver's side switch in UNLOCK position. Measure voltage at unlock relay terminal 3 (86). Meter should read battery voltage. If OK, go to next step. If not OK, repair open to driver's side switch.

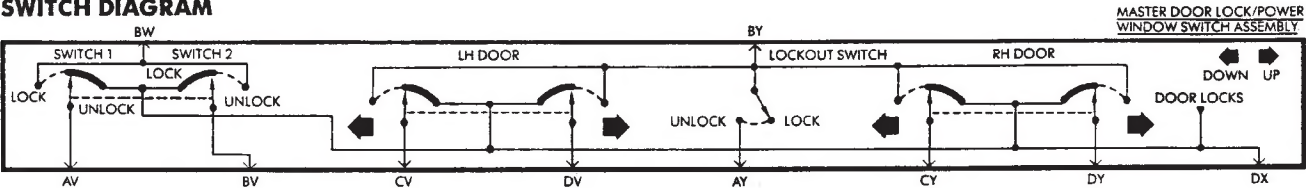
(10) Hold driver's side switch in LOCK position. Measure voltage at lock relay terminal 1 (30). Meter should read battery voltage. If OK, go to next step. If not OK, replace lock relay.

(11) Hold driver's side switch in UNLOCK position. Measure voltage at unlock relay terminal 1 (30). Meter should read battery voltage. If OK, see Power Lock Motor diagnosis. If not OK, replace unlock relay.

DRIVER'S POWER LOCK SWITCH—2-DOOR (LHD)



SWITCH DIAGRAM



SWITCH TEST  
Switch Grounds

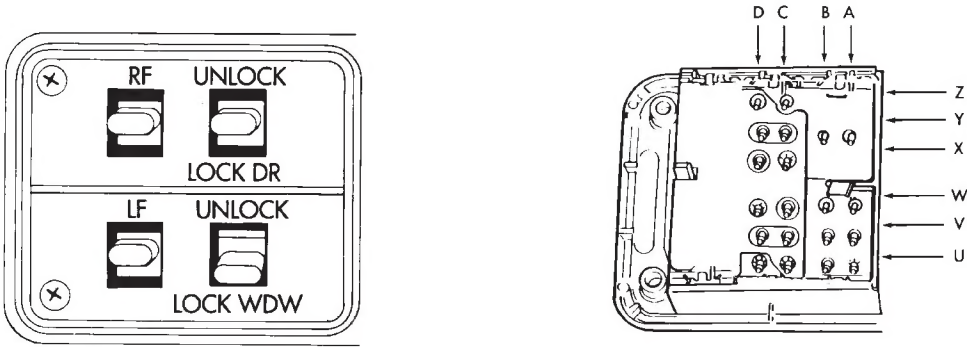
| SWITCH POSITION | TERMINALS                        | ZERO OHMS |
|-----------------|----------------------------------|-----------|
| Off (Normal)    | DX and: AV, BV, CV<br>DV, CY, DY | Yes       |
|                 | BW and DX                        | No        |
|                 | BY and DX                        | No        |

SWITCH TEST

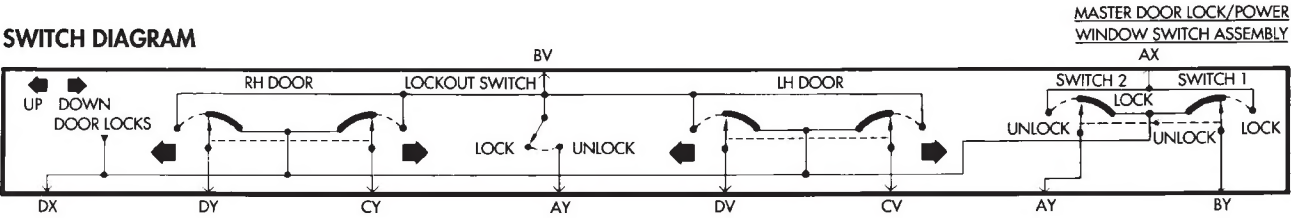
| SWITCH POSITION | TERMINALS | ZERO OHMS |
|-----------------|-----------|-----------|
| Unlock          | BW and BV | Yes       |
| Lock            | BW and AV | Yes       |



DRIVER'S POWER LOCK SWITCH—2-DOOR (RHD)



SWITCH DIAGRAM



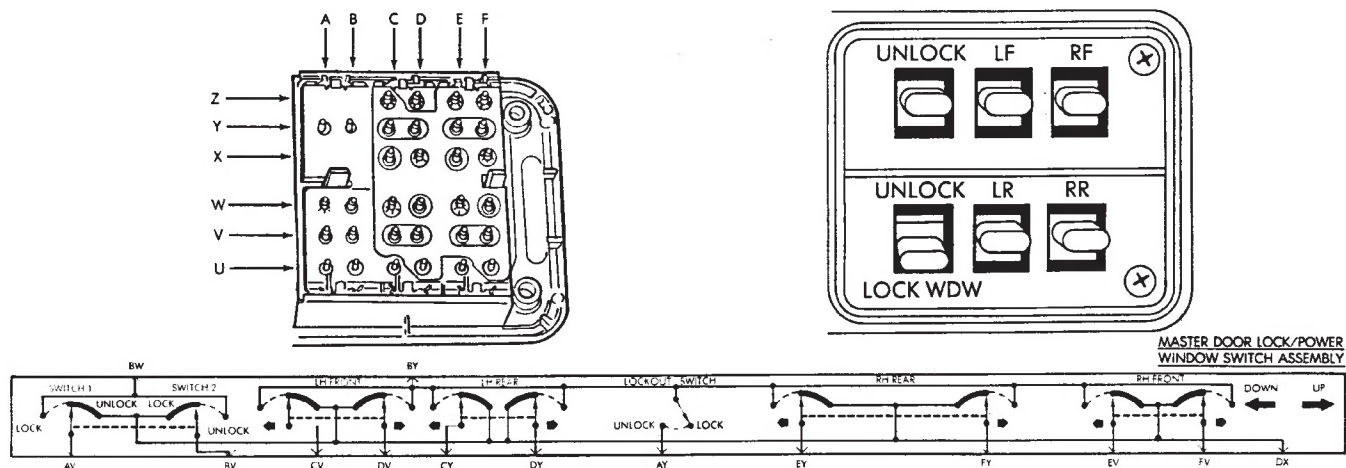
SWITCH TEST  
Switch Grounds

| SWITCH POSITION | TERMINALS                        | ZERO OHMS |
|-----------------|----------------------------------|-----------|
| Off (Normal)    | DX and: AV, BV, CV<br>DV, CY, DY | Yes       |
|                 | BW and DX                        | No        |
|                 | BY and DX                        | No        |

SWITCH TEST

| SWITCH POSITION | TERMINALS | ZERO OHMS |
|-----------------|-----------|-----------|
| Unlock          | AX and AY | Yes       |
| Lock            | AX and BY | Yes       |

### DRIVER'S POWER LOCK SWITCH—4-DOOR



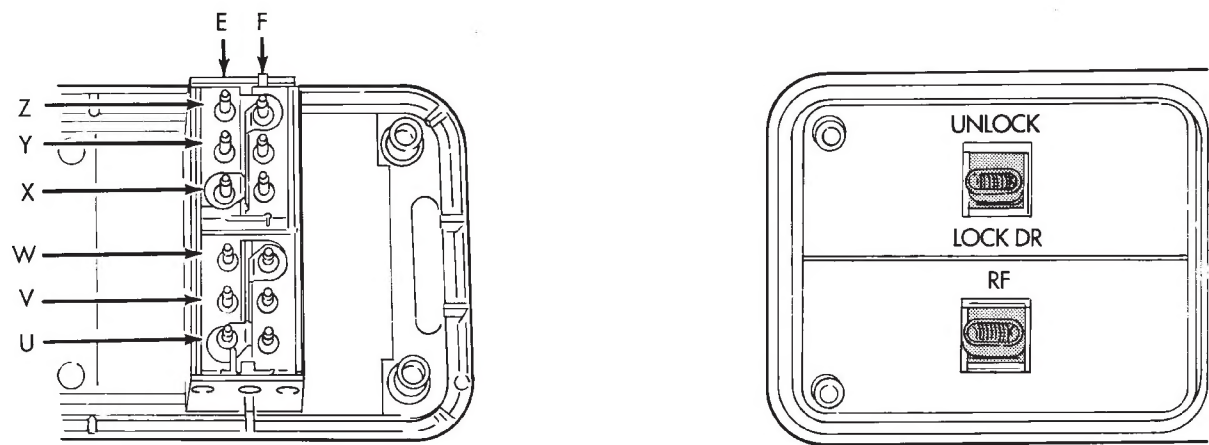
#### SWITCH TEST Switch Grounds

| SWITCH POSITION | TERMINALS                                      | ZERO OHMS |
|-----------------|------------------------------------------------|-----------|
| Off (Normal)    | DX and: AV, BV, CV, DV, CY, DY, EY, FY, EV, FV | Yes       |
|                 | BW and DX                                      | No        |
|                 | BY and DX                                      | No        |

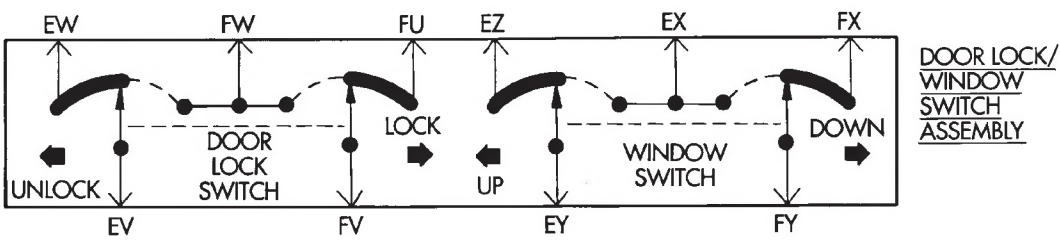
#### SWITCH TEST

| SWITCH POSITION | TERMINALS | ZERO OHMS |
|-----------------|-----------|-----------|
| Unlock          | BW and BV | Yes       |
| Lock            | BW and AV | Yes       |

PASSENGER'S POWER LOCK SWITCH



SWITCH DIAGRAM



SWITCH TEST  
Lock Switch

| SWITCH POSITION | TERMINALS  | ZERO OHMS |
|-----------------|------------|-----------|
| Off (Normal)    | EW and EV  | Yes       |
|                 | FU and FV  | Yes       |
|                 | All Others | No        |
| Unlock          | EW and EV  | Yes       |
|                 | FW and FV  | Yes       |
|                 | All Others | No        |
| Lock            | FU and FV  | Yes       |
|                 | FW and EV  | Yes       |
|                 | All Others | No        |

## POWER LOCK MOTOR

(1) Once it is determined which lock motor is inoperative, that motor can be tested. Disconnect the wire connector at the motor. Apply 12 volts to the motor terminals to check its operation in one direction. Reverse the polarity to check the operation in the other direction. If OK, repair circuits to power lock/unlock relays as required. If not OK, replace the motor.

(2) If all lock motors are inoperative, the problem may be caused by one shorted motor. Disconnecting a shorted motor will allow the good motors to operate. Disconnect each motor connector, one at a time, and re-check both lock and unlock functions while operating the door lock switch. If disconnecting one motor causes the other motors to become functional, go back to step 1 to test the disconnected motor.

## KEYLESS ENTRY TRANSMITTER

(1) Depress either transmitter button and note whether red Light-Emitting Diode (LED) on transmitter case lights. If OK, go to next step. If not OK, replace batteries as described under Keyless Entry Transmitter in Service Procedures. Test transmitter operation. If OK, discard faulty batteries. If not OK, go to next step.

(2) Perform transmitter program procedure with suspect transmitter and another known good transmitter, as described in Service Procedures. Test operation with both transmitters. If both transmitters fail to operate power locks, see Keyless Entry Module diagnosis. If known good transmitter operates power locks and suspect transmitter does not, replace faulty transmitter. Be certain to perform transmitter program procedure again when replacing faulty transmitter and to erase test transmitter access code from keyless entry module.

## KEYLESS ENTRY MODULE

(1) Check fuse 9 in fuseblock module. If OK, go to next step. If not OK, replace fuse.

(2) Check for battery voltage at fuse 9. If OK, go to next step. If not OK, repair circuit from power distribution center.

(3) Access keyless entry module connectors as described in Keyless Entry Module Remove/Install.

(4) Unplug module connector from module. Check connector and receptacle in module for loose, corroded, or damaged terminals and pins. If OK, go to next step. If not OK, repair as required.

(5) Probe connector cavity for module terminal 1 and check for battery voltage. If OK, go to next step. If not OK, repair circuit to fuse 9 as required.

(6) Install a jumper wire from connector cavity for module terminal 1 to connector cavity for module terminal 3. Doors should lock. If OK, go to step 8. If not OK, go to next step.

(7) Check for continuity between connector cavity for module terminal 3 and lock relay terminal 3 (86). There should be continuity. If OK, replace lock relay. If not OK, repair circuit as required.

(8) Install a jumper wire from connector cavity for module terminal 1 to connector cavity for module terminal 4. Doors should unlock. If OK, replace module. If not OK, go to next step.

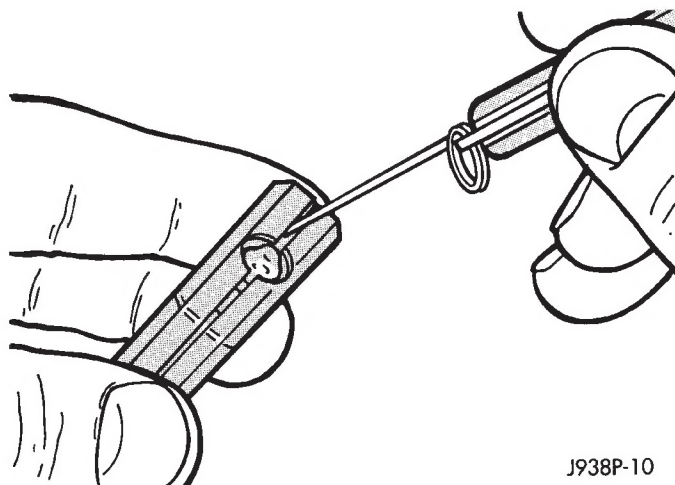
(9) Check for continuity between connector cavity for module terminal 4 and unlock relay terminal 3 (86). There should be continuity. If OK, replace unlock relay. If not OK, repair circuit as required.



## SERVICE PROCEDURES

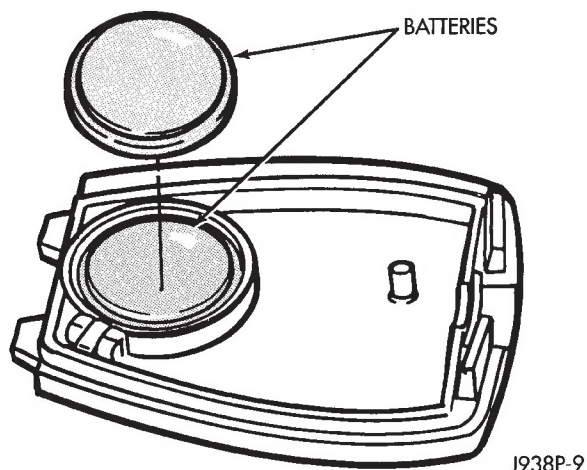
### KEYLESS ENTRY TRANSMITTER

To replace transmitter batteries, separate transmitter case by prying gently with a trim stick or other wide flat-bladed tool at center seam (Fig. 2). Case snaps open and shut. Replace with CR1616 3-volt batteries or equivalent (Fig. 3).



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**Fig. 2 Separate Transmitter Halves**



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**Fig. 3 Battery Install**

### TRANSMITTER PROGRAMMING PROCEDURE

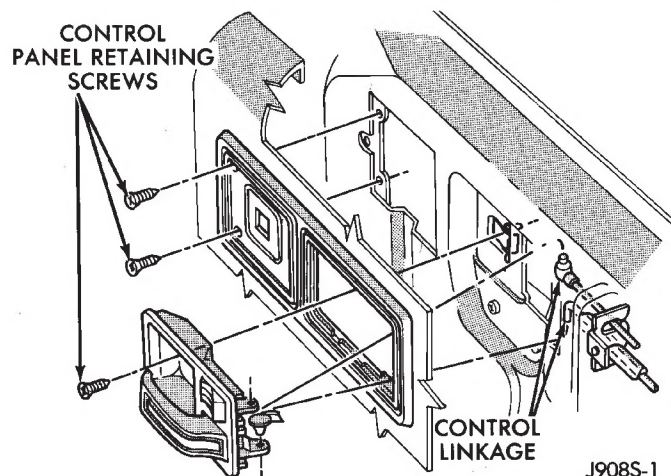
- (1) Open the driver's door of the vehicle. Leave it open through the programming procedure.
- (2) Move the mechanical door lock lever to the LOCK position.
- (3) Turn the ignition switch to the ON position.
- (4) Within 20 seconds, aim a transmitter at the keyless entry module receiver dome and press the LOCK button for at least 5 seconds. Once the module accepts the programming code, the driver's door will unlock.
- (5) Once the first transmitter has been programmed, additional transmitters (up to 4) may be

programmed into the module. Within 20 seconds of the previous transmitter programming, move the mechanical door lock lever to the LOCK position. Aim another transmitter at the receiver dome and press the LOCK button for at least 5 seconds. The door lock will cycle again.

(6) To lock the programmed codes into the module, the ignition switch must be turned OFF and back ON within 20 seconds after programming the last transmitter's code. At that time, all previous codes are erased from the module.

### POWER LOCK SWITCH REMOVE/INSTALL

- (1) Remove the interior door latch release assembly and control panel retaining screws (Fig. 4).



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**Fig. 4 Power Window/Lock Control Panel Remove/Install**

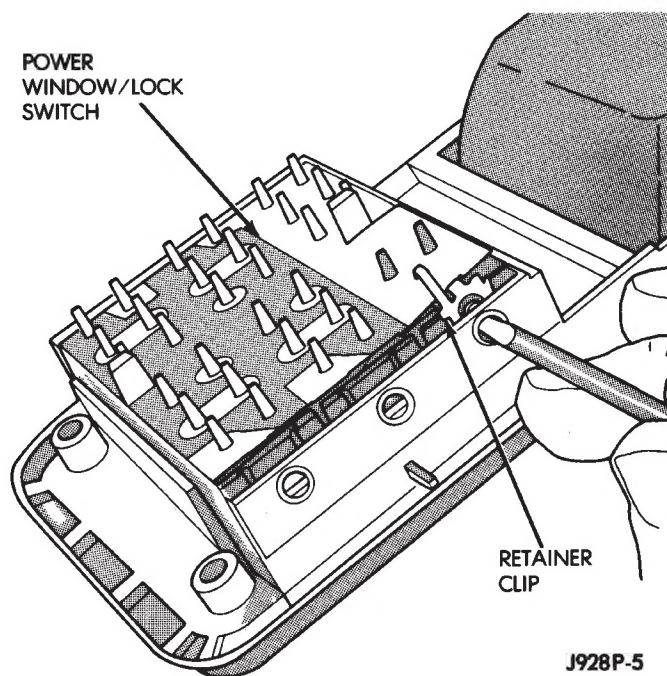
- (2) Disconnect the control linkage and the wire harness connector.
- (3) Remove the latch release and control panel assembly.
- (4) The switch is retained to the panel with clips (Fig. 5). Push in on the retainer part of the clip and pry the clips.
- (5) To install switch, position switch and press in retainer clips until they snap into position. Reverse remaining removal procedures to complete installation.

### POWER LOCK MOTOR REMOVE/INSTALL

#### DOORS

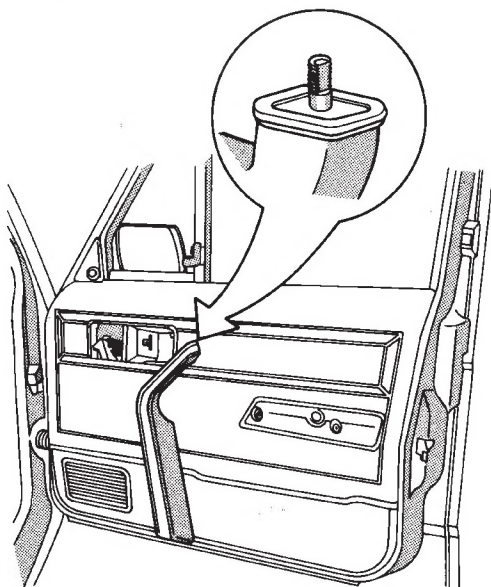
- (1) Remove interior door latch release assembly and control panel retaining screws (Fig. 4).
- (2) Disconnect control linkage and wire harness connector.
- (3) Remove latch release and control panel assembly.





**Fig. 5 Power Lock Switch Remove**

- (4) Remove armrest lower retaining screws.
- (5) Swing armrest downward to a vertical position. This is necessary to disconnect armrest from upper retainer clip (Fig. 6).

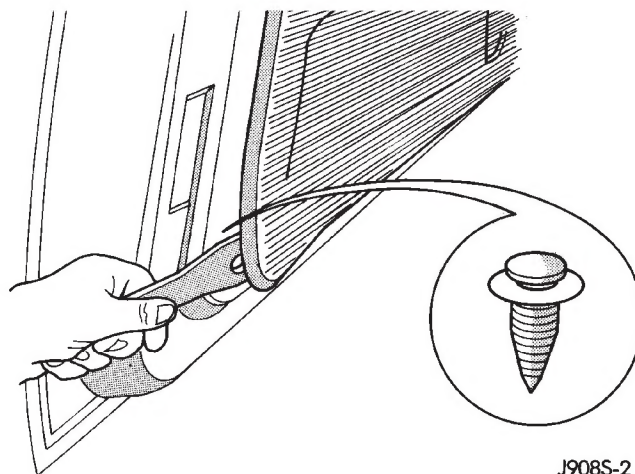


**Fig. 6 Armrest Retainer Clip**

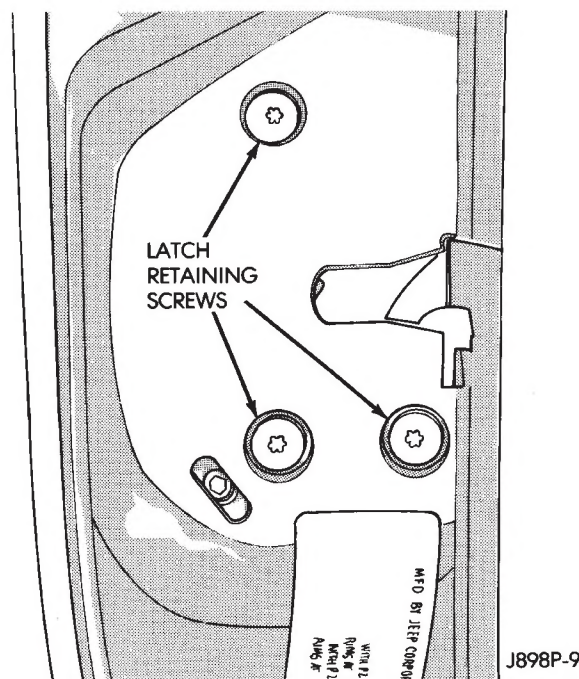
- (6) Pull armrest straight out from trim panel.
- (7) Remove trim panel with a wide flat-bladed tool (Fig. 7).

**To aid in removal of trim panel, start at bottom of panel.**

- (8) Remove plastic water dam sheet.
- (9) Remove latch retaining screws (Fig. 8).
- (10) Grind out or drill out the lock motor rivets



**Fig. 7 Trim Panel Remove**



**Fig. 8 Latch Remove/Install**

and remove motor with latch assembly and remote control rods (Fig. 9).

(11) Reverse removal procedures to install. Use new rivets or nuts and screws to install motor. Tighten latch screws to 9 N·m (7 ft. lbs.). Use an adhesive/sealant to re-install water dam sheet.

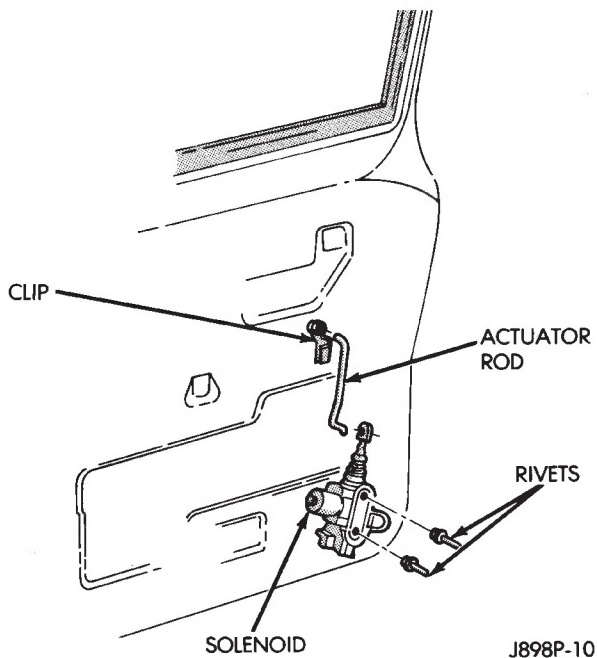
### LIFTGATE

(1) Remove 2 screws at the top outside edges of the liftgate trim panel.

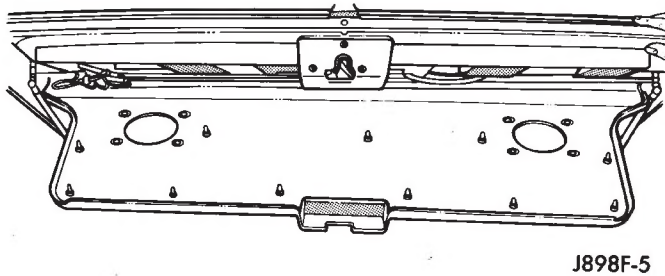
(2) Remove trim panel with a wide flat-bladed tool (Fig. 10).

**To aid in removal of trim panel, start at bottom of panel.**

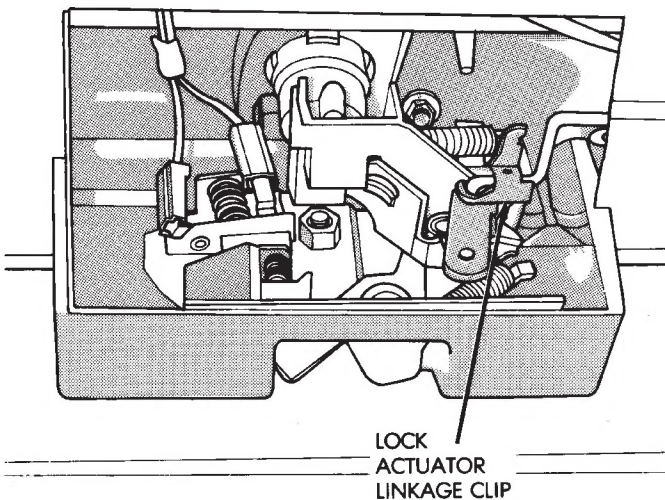
- (3) Disconnect lock actuator linkage clip (Fig. 11).
- (4) Remove 3 latch retaining screws (Fig. 12).
- (5) Remove latch.



**Fig. 9 Motor Remove/Install**

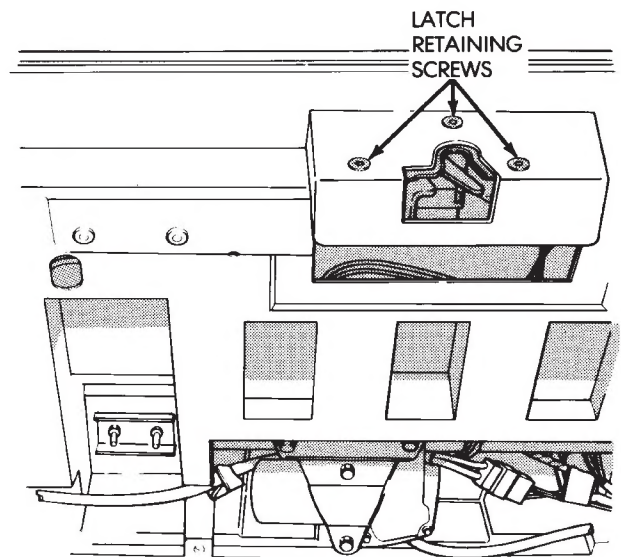


**Fig. 10 Liftgate Trim Panel Remove/Install**



**Fig. 11 Lock Actuator Linkage Clip**

(6) Drill out 2 rivets and remove motor.



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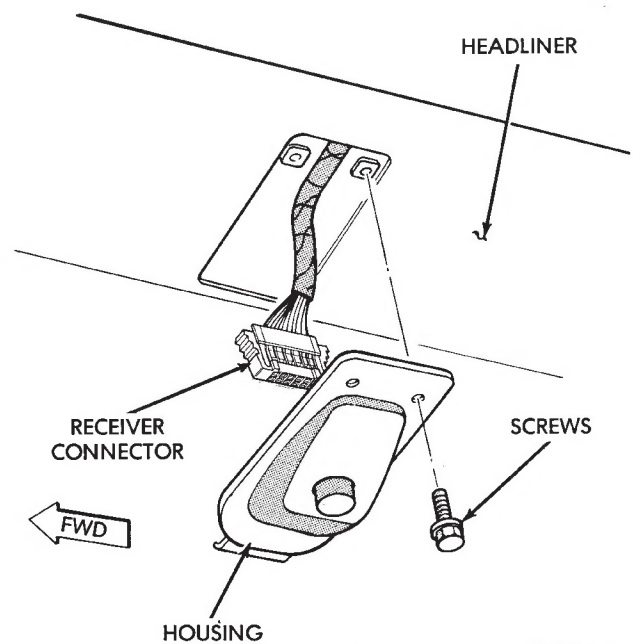
**Fig. 12 Latch Assembly Remove/Install**

(7) Reverse removal procedures to install. Tighten latch screws to 9 N·m (7 ft. lbs.).

## KEYLESS ENTRY MODULE REMOVE/INSTALL

### WITHOUT OVERHEAD CONSOLE

(1) Remove 2 screws attaching receiver housing to headlining (Fig. 13).



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**Fig. 13 Remove/Install Keyless Entry Housing**

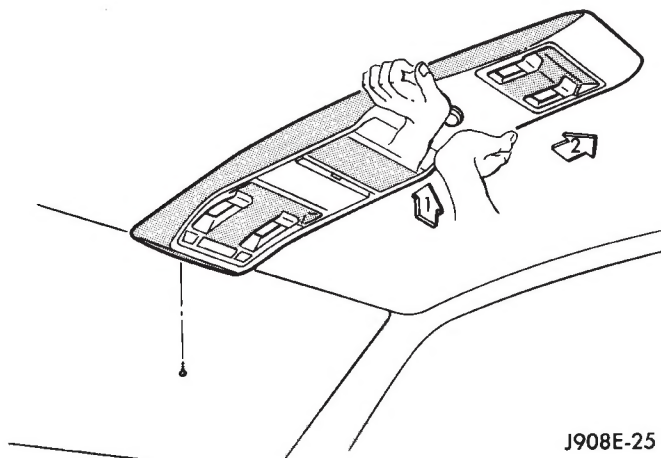
- (2) Pull housing toward rear of vehicle to disengage clip.
- (3) Disconnect module harness connector.
- (4) Remove circuit board from housing.



(5) Reverse removal procedures to install.

### WITH OVERHEAD CONSOLE

(1) Remove screw forward of compass unit (Fig. 14).



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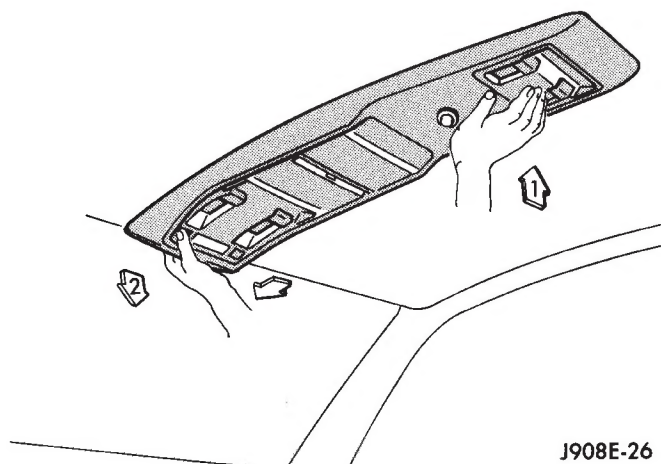
**Fig. 14 Remove/Install Overhead Console**

(2) Flex housing outward while pressing upward to disengage housing from the rear bracket (arrow 1) (Fig. 14).

(3) Slide console rearward until the console detaches from the front mounting bracket (arrow 2) (Fig. 14).

(4) While pressing up on rear of console (arrow 1), slide console forward holding front away from headliner (arrow 2). Move console forward until the rear detaches from headliner and becomes free (Fig. 15).

(5) Disconnect wire harnesses from keyless entry



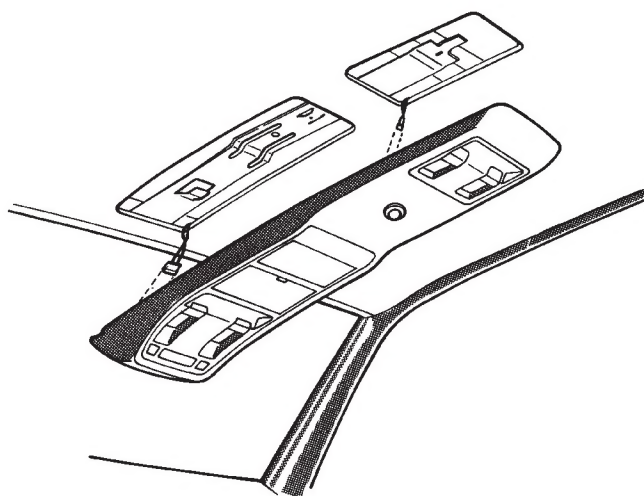
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**Fig. 15 Remove/Install Overhead Console**

and compass (Figs. 16 and 17).

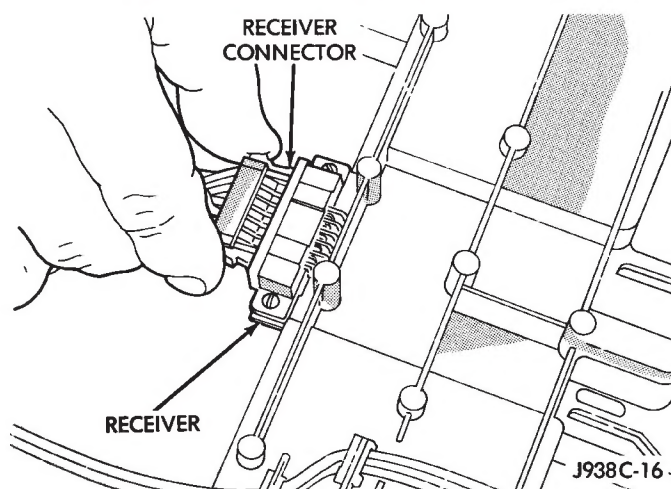
(6) Pinch forward area of receiver cover and release clips. Slide cover out from under rib (Fig. 18).

(7) Remove screw and printed circuit board.



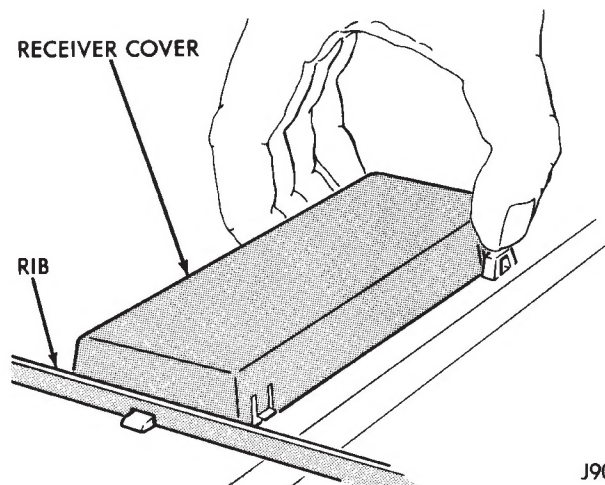
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**Fig. 16 Disconnect Wire Harnesses**



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**Fig. 17 Keyless Entry Harness Connector**



J908P-10

**Fig. 18 Keyless Entry Receiver Cover Remove/Install**



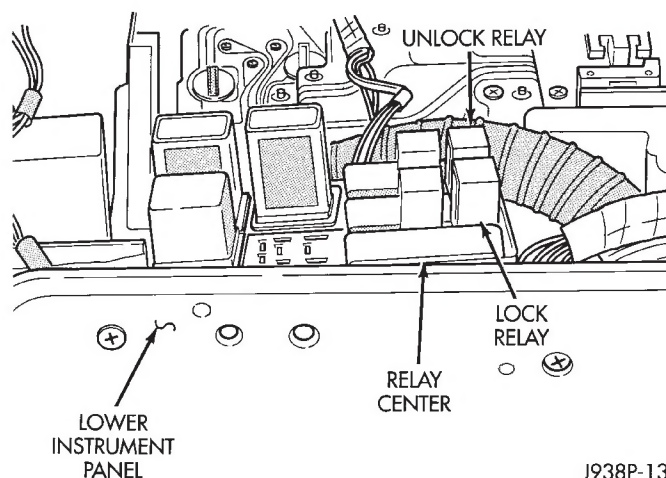
(8) Reverse removal procedures to install. Be sure to flex housing outward near the keyless entry module until the console snaps onto the rear mounting bracket.

#### POWER LOCK/UNLOCK RELAY REMOVE/INSTALL

The power lock/unlock relays are located in the relay center. The relay center is located on the lower instrument panel trim cover just right of the steering column (Fig. 19).

(1) Remove the appropriate relay from the relay center.

(2) Reverse removal procedure to install.



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**Fig. 19 Power Lock/Unlock Relays**